(12) **PATENT**
(19) **AUSTRALIAN PATENT OFFICE**

(11) Application No. **AU 199924995 B2**
(10) Patent No. **716696**

(54) Title
Storing device for storage of assorted flat packages that contain rigid flat articles therein

(51)[6] International Patent Classification(s)
B65G 001/04 **B65D 085/57**
B65D 001/22 **G11B 023/03**
B65D 025/04 **G11B 033/02**
B65D 025/10

(21) Application No: **199924995** (22) Application Date: **1999.04.28**

(30) Priority Data

(31) Number	(32) Date	(33) Country
9808983	**1998.04.29**	**GB**

(43) Publication Date : **1999.11.25**
(43) Publication Journal Date : **1999.11.25**
(44) Accepted Journal Date : **2000.03.02**

(71) Applicant(s)
Jackson Yu

(72) Inventor(s)
Jackson Yu

(74) Agent/Attorney
WATERMARK PATENT and TRADEMARK ATTORNEYS,Locked Bag 5,HAWTHORN VIC 3122

(56) Related Art
US 5358124
US 5035332
US 4836393

ABSTRACT

STORING DEVICE FOR STORAGE OF ASSORTED FLAT PACKAGES THAT CONTAIN RIGID FLAT ARTICLES THEREIN

A storage device includes two faceplates (2,3) disposed apart from each other in a parallel manner to confine an elongate storing area, two elongate support members (5) and two coupling members (70). Each faceplate (2,3) has two lateral side portions that define at least two insert holes. Each support member (5) has first and second ends (5A), a horizontal rest portion (5B) that extends through the entire length between the first and second ends (5A), and a pendent portion (5C) that is suspended from the horizontal rest portion (5B) that forms an angle with the latter. Each coupling member (70) has an anchoring seat (55) to be fitted in by one of the first and second ends (5A) of the support members (5), and a mounting insert (731) formed integrally with the anchoring seat (55) and press-fitted into a respective one of the insert holes. The coupling members (70) are oriented so that the support members (5) are disposed parallel to each other with the horizontal rest portion (5B) facing upwards when the first and second ends (5A) of the elongate support members (5) are fitted in the anchoring seats (55) and the mounting inserts (731) are fitted in the insert holes.

(Fig. 1 is the most illustrative drawing)

Regulation 3.2(2)

AUSTRALIA

Patents Act 1990

ORIGINAL
COMPLETE SPECIFICATION
STANDARD PATENT

Application Number:
Lodged:

Invention Title: STORING DEVICE FOR STORAGE OF ASSORTED FLAT PACKAGES THAT CONTAIN RIGID FLAT ARTICLES THEREIN

The following statement is a full description of this invention, including the best method of performing it known to me :-

STORAGE DEVICE FOR STORAGE OF ASSORTED FLAT PACKAGES THAT CONTAIN RIGID FLAT ARTICLES THEREIN

The invention relates to a storage device, more particularly to a storage device for storage of assorted flat packages that contain rigid flat articles such that the flat packages will be propped uprightly thereby.

A conventional storage device includes a container body that contain articles therein. Since the shape and dimension of the container body are fixed and cannot be varied, the utility of the conventional storage device is limited, and the container body is unable to correspond with the various shapes of the articles to be received therein. In addition, the construction and assembly of the storage device are relatively complicated, thereby resulting in difficulties during the assembly and the manufacture process.

Therefore, it would be desirable to provide a storage device for storage of assorted flat packages that contain rigid flat articles therein such that the flat packages will be propped uprightly thereby.

It would also be desirable to provide a storage device for storage of assorted flat packages that contain flat articles therein, the shape and dimensions of the storage device can be variable.

Furthermore, it would be desirable to provide a storage device for storage of assorted flat packages that contain rigid flat articles therein, the manufacture and assembly of the storing device being easy to conduct.

Accordingly, the storage device of this invention is used to store assorted flat packages that contain rigid flat articles, and includes two faceplates, two elongate support members and two coupling members. The faceplates are disposed opposite to and are spaced apart from each other in a parallel manner so as to confine an elongate storing area extending in a first longitudinal direction which is either parallel to or normal to the faceplates. Each of the faceplates has two lateral side portions on a major faceplate thereof, and defines at least two insert holes in the lateral side portions, respectively, along a first horizontal level. Each of the elongate support members has first and second ends, a horizontal rest portion that extends through the entire length thereof between the first and second ends, and a pendent portion that is suspended from the horizontal rest

portion and that forms an angle with the latter over the entire length thereof. Each of the coupling members has an anchoring seat to be fitted by one of the first and second ends

of the elongate support members, and a mounting insert which is integrally formed with the anchoring seat and which is press-fitted into a respective one of the insert holes of the faceplates. The coupling members are oriented so that the elongate support members are disposed parallel to each other along the first longitudinal direction with the horizontal rest portion thereof facing upwards when the first and second ends of the elongate support members are fitted in the anchoring seats of the coupling members and the mounting inserts of the coupling members are press-fitted into the insert holes of the faceplates.

Other features and advantages of this invention will become more apparent in the following detailed description of the preferred embodiment of this invention, with reference to the accompanying drawings, in which:

Figure 1 is an exploded view of a first preferred embodiment of a storage device according to this invention;

Figure 2 is a perspective view of the first preferred embodiment of this invention;

Figure 3 illustrates how a flat package is propped in the first preferred embodiment of this invention;

Figure 4 is an exploded view of a second preferred embodiment of this invention;

Figures 5 and 6 are exploded views of a third

preferred embodiment of this invention;

Figures 7 and 8 are perspective views of a fourth preferred embodiment of this invention;

Figure 9 is an exploded view of a fifth preferred embodiment of this invention; and

Figures 10 and 11 are side views of a sixth preferred embodiment of this invention.

Before the present invention is described in greater detail, it should be note that the same numerals will be used to denote the same element through the specification.

Referring to Figures 1 and 2, the first preferred embodiment of a storage device of this invention is used for storing assorted flat packages 8, 9 (see Figs. 2 and 3) that contain rigid flat articles, and includes two faceplates 2,3, two elongate support members 5 and two coupling members 70.

The faceplates 2, 3 are disposed opposite to and are spaced apart from each other in a parallel manner so as to confine an elongate storing area extending along a first longitudinal direction which is either parallel to or normal to the faceplates 2, 3. Each of the faceplates 2, 3 has two lateral side portions 2A, 3A on a major faceplate thereof, and defines two insert holes 732 in the lateral side portions 2A, 3A, respectively, along a first horizontal level. Each of the elongate support members 5 has first and second

ends 5A, a horizontal rest portion 5B that extends through the entire length thereof between the first and second ends 5A, and a pendent portion 5C that is suspended from the horizontal rest portion 5B and that forms an angle with the latter over the entire length thereof. Each of the coupling members 70 has an anchoring seat 55 to be fitted by one of the first and second ends 5A, and a mounting insert 731 which is integrally formed with the anchoring seat 55 and which is press-fitted into a respective one of the insert holes 732 of the faceplates 2, 3. The coupling members 70 are oriented so that the elongate support members 5 are disposed parallel to each other along the first longitudinal direction with the horizontal rest portions 5B facing upward when the first and second ends 5A of the elongate support members 5 are fitted in the anchoring seats 55 of the coupling members 70, and the mounting inserts 731 of the coupling members 70 are press-fitted into the insert holes 732 of the faceplates 2, 3.

In the first preferred embodiment, as best shown in Figure 1, the coupling members 70 are three bracing rods 71 which extend between the faceplates 2, 3 and which are transverse to the first longitudinal direction, i. e. the elongate support members 5. The bracing rods 71 are disposed apart from one another in a parallel manner. Each of the bracing rods 71 has

two mounting inserts 731 at opposite ends thereof to be inserted into the respective one of the insert holes 732 so as to strut the faceplates 2,3. Each of the bracing rods 71 further has two anchoring seats 55 disposed apart from each other and inboard to the mounting inserts 731 respectively so as to be fitted by first or second ends 5A of two of the elongate support members 5. The pendent portions 5C of the support members 5 are fitted into the anchoring seats of the middle bracing rod. The first and second ends 5A of the support members 5 have the same structure and are integrally formed with the horizontal rest portion 5B and the pendent portion 5C.

In the second preferred embodiment, as best shown in Figure 4, the coupling members include two upright bracing plates 74, and a middle bracing rod disposed parallel to the bracing plates 74. The anchoring seats 55 are formed as disc-shaped members, each of which has a rim portion 550 to be disposed on the respective upright bracing plate 74 inboard to the mounting insert 731, and a slot portion 551 disposed radially and inwardly from the rim portion 550 so as to be fitted by the first and second ends of the elongate support members 5. Preferably, the slot portion 551 is shaped to be correspond with the cross section of a respective one of the first and second ends 5A (see Fig. 1).

Referring again to Figures 2 and 4, the first and

second preferred embodiments respectively have a plurality of spacer members 4 disposed consecutively on each of the faceplates 2, 3 along a second horizontal level above the first horizontal level. The spacer members 4 are spaced uniformly from one another along the second horizontal level, and extend in a direction normal to the faceplates 2, 3 and into the storing area in order to support the flat package 8, 9 in the propped position when the latter are disposed on the support members 5 (see Figs. 2 and 3). A plurality of cylindrical studs 43 are used as the spacer members 4 in the first and second preferred embodiments.

Figures 5, 6, 7 and 8 illustrate third and fourth preferred embodiments, while Figure 9 illustrates a fifth preferred embodiment of this invention. Unlike, the previous embodiments, the elongate support members 5 extend in the first longitudinal direction which is normal to the faceplates 2, 3. In the third and fourth preferred embodiments, the spacer members 4 are formed consecutively on the elongate support members 5 on another pair of bracing rods along a third horizontal level above the first horizontal level in order to support the flat packages 8, 9 in the propped position when the latter are disposed on the support members 5 (see Fig. 7). Note that each of the spacer members 4 is spaced from one another in a parallel manner, and defines a recessed portion 42 that extends in a

direction parallel to the faceplates 2, 3.

Referring to Figures 10 and 11, a sixth preferred embodiment of this invention includes two faceplates 2, 3, two bracing rods 71, a plurality of spacer members 4, and a plurality of bottom seating members 44. The faceplates 2, 3 are disposed opposite to and are spaced apart from each other in a parallel manner so as to define an elongate storing area extending along a first longitudinal direction which is parallel to the faceplates 2, 3. Each of the faceplates 2, 3 has two lateral side portions on a major faceplate surface thereof and two insert holes respectively in the lateral side portions along a first horizontal level. The bracing rods 71 extend between the faceplates 2, 3 and are spaced apart from each other in a parallel manner such that the bracing rods 71 are transverse to the first longitudinal direction. Each of the bracing rods 71 has two mounting inserts at opposite ends thereof to be inserted into a respective one of the insert holes of the faceplates 2, 3 so as to strut the faceplates 2, 3. The spacer members 4 are disposed consecutively on each of the faceplates 2, 3 along a second horizontal level above the first horizontal level. Each of the spacer members 4 is spaced from one another and extends in a direction normal to a respective one of the faceplates 2, 3 and into the storing area. The bottom seating members 44 are

disposed consecutively on each of the faceplates 2, 3 along a third horizontal level which is interposed between the first and second horizontal levels. Each of the bottom seating members 44 is spaced from one another and is disposed between adjacent two of the spacer members 4. The bottom seating members 44 extend in the same direction as the spacer members 4 so as to support one of the flat packages 8 when the latter are inserted between corresponding adjacent two of the spacer members 4 so as to be propped uprightly thereby. In Figure 10, the spacer members 4 and the bottom seating members 44 are an upper row of aligned cylindrical rods 43 that extend along the second horizontal level, and a lower row of aligned cylindrical rods that extend along the third horizontal level, respectively .

In Figure 11, the spacer members 4 are a plurality of upward protrusions 43, and the bottom seat members 44 are integrally formed with the spacer members 4. Each of the bottom seating members 44 has a recessed portion 440 and two lateral portions 441 which extend upwardly from the recessed portion 440 and which are connected integrally to an adjacent pair of the protrusions 43.

As explained above, the shape and dimensions of the storage device of this invention can be varied and the assembly and the manufacture of the storage device is

easy to conduct. The objects of the invention are thus met.

"Comprises/comprising" when used in this specification is taken to specify the presence of stated features, integers, steps or components but does not preclude the presence or addition of one or more other features, integers, steps, components or groups thereof.

The Claims defining the invention are as follows:

1. A storage device for storage of assorted flat packages that contain rigid flat articles, each of the flat packages being propped uprightly with a major package surface thereof facing in a forward direction, the storage device including :

two faceplates disposed opposite to and spaced apart from each other in a parallel manner so as to define an elongate storing area extending in a first longitudinal direction which is parallel to or normal to the faceplates, each of the faceplates having two lateral side portions on a major faceplate surface thereof and defining at least two insert holes respectively in the lateral side portions along a first horizontal level;

two elongate support members respectively having first and second ends, a horizontal rest portion extending through the entire length thereof between the first and second ends, and a pendent portion suspended from the horizontal rest portion and forming an angle with the horizontal rest portion over the entire length thereof; and

two coupling members respectively having an anchoring seat to be fitted by one of the first and second ends of the elongate support members, and a mounting insert integrally formed with the anchoring seat and press-fitted into a respective

one of the insert holes of the faceplates, the coupling members being oriented so that the elongate support members are disposed in parallel and extend along the first longitudinal direction with the horizontal rest portions thereof facing upward when the first and second ends are fitted in the anchoring seats and the mounting inserts of the coupling members are fitted in the insert holes of the faceplates.

2. The storage device as defined in Claim 1, wherein the first longitudinal direction is parallel to the faceplates, the coupling members including two bracing rods that extend between the faceplates and that are transverse to the first longitudinal direction such that the bracing rods are disposed parallel to and are spaced apart from each other, each of the bracing rods having two of the mounting inserts at opposite ends thereof and fitted into a respective one of the insert holes of the faceplates so as to strut the faceplates, each of the bracing rods further having two of the anchoring seats disposed apart from each other and inboard to the mounting inserts respectively so as to be fitted by a respective one of the first and second ends of the elongate support members so as to mount the elongate support members in the first longitudinal direction.

3. The storage device as defined in Claim 2, wherein the pendent portion of each of the elongate support members is fitted into the respective one of the anchoring seats.

4. The storage device as defined in Claim 1, wherein the first longitudinal direction is parallel to the faceplates, the coupling members including two upright bracing plates which extend between the faceplates and which are transverse to the first longitudinal direction such that the bracing rods are spaced apart from each other in a parallel manner, each of the bracing plates having two of the mounting inserts at opposite ends thereof inserted into respective one of the insert holes of the faceplates so as to strut the faceplates, each of the upright bracing plates further having two of the anchoring seats disposed apart from each other and inboard to the mounting inserts respectively so as to be fitted by a respective one of the first and second ends of the elongate support members so as to mount the elongate support members in the first longitudinal direction.

5. The storage device as defined in Claim 4, wherein each of the anchoring seats is formed as a disc-shaped member and has a rim portion to be disposed on the respective one of the upright bracing plates inboard to the mounting inserts, and

a slot portion disposed radially and inwardly from the rim portion so as to be fitted by the first and second ends of the elongate support members.

6. The storage device as defined in Claim 5, wherein the slot portion is shaped to correspond with the cross section of a respective one of the first and second ends of the elongate support members.

7. The storage device as defined in Claim 6, further including a plurality of spacer members disposed consecutively on each of the faceplates along a second horizontal level above the first horizontal level, each of the spacer members being spaced from one another and extending in a direction normal to the faceplates and into the storing area in order to support the flat packages in the propped position when the flat packages are disposed on the elongate support members.

8. The storage device as defined in Claim 1, wherein the first longitudinal direction is normal to the faceplates.

9. The storage device as defined in Claim 8, further including a plurality of spacer members disposed consecutively on each of the elongate support members along a third horizontal level above the first horizontal level, each of the spacer members being spaced from one another and extending in a direction parallel to the faceplates and into the

storing area in order to support the flat packages in the propped position when the flat packages are disposed on the elongate support members.

10. A storage device for storage of assorted flat packages that contain rigid flat articles, each of the flat packages being propped uprightly with a major package surface thereof facing in a forward direction, including

two faceplates disposed opposite to and spaced apart from each other in a parallel manner so as to define an elongate storing area extending along a first longitudinal direction which is parallel to the faceplates, each of the faceplates having two lateral side portions on a major faceplate thereof and defining at least two insert holes respectively in the lateral side portions along a first horizontal level;

two bracing rods extending between the faceplates and spaced apart from each other in a parallel manner such that the bracing rods are transverse to the first longitudinal direction, each of the bracing rods having two mounting inserts at opposite ends thereof to be inserted into a respective one of the insert holes of the faceplates so as to strut the faceplates;

a plurality of spacer members disposed consecutively on each of the faceplates along a

second horizontal level above the first horizontal level, each of the spacer members being spaced from one another and extending in a direction normal to a respective one of the faceplates and into the storing area; and

a plurality of bottom seating members disposed consecutively on each of the faceplates along a third horizontal level which is interposed between the first and second horizontal levels, each of the bottom seating members being spaced from one another and being disposed between adjacent two of the spacer members, each of the bottom seating members extending in the same direction as the adjacent two of the spacer members so as to support one of the flat packages thereon when the flat packages are inserted between corresponding adjacent two of the spacer members so as to be propped uprightly thereby.

11. The storage device as defined in Claim 10, wherein the spacer members and the bottom seating members are an upper row of aligned rods extending along the second horizontal level, and a lower row of aligned rods extending along the third horizontal level, respectively.

12. The storage device as defined in Claim 10, wherein each of the bottom seating members has a recessed portion and two lateral portions extending upwardly

from the recessed portion and connected integrally to an adjacent pair of the spacer members.

13. The storage device as defined in claim 1 or claim 10, substantially as described hereinbefore with reference to and as illustrated in Figures 1 to 11 of the accompanying drawings.

DATED this 22nd day of December, 1999

JACKSON YU

WATERMARK PATENT & TRADE MARK ATTORNEYS
290 BURWOOD ROAD
HAWTHORN VIC 3122
AUSTRALIA

RCS/MBP/SH

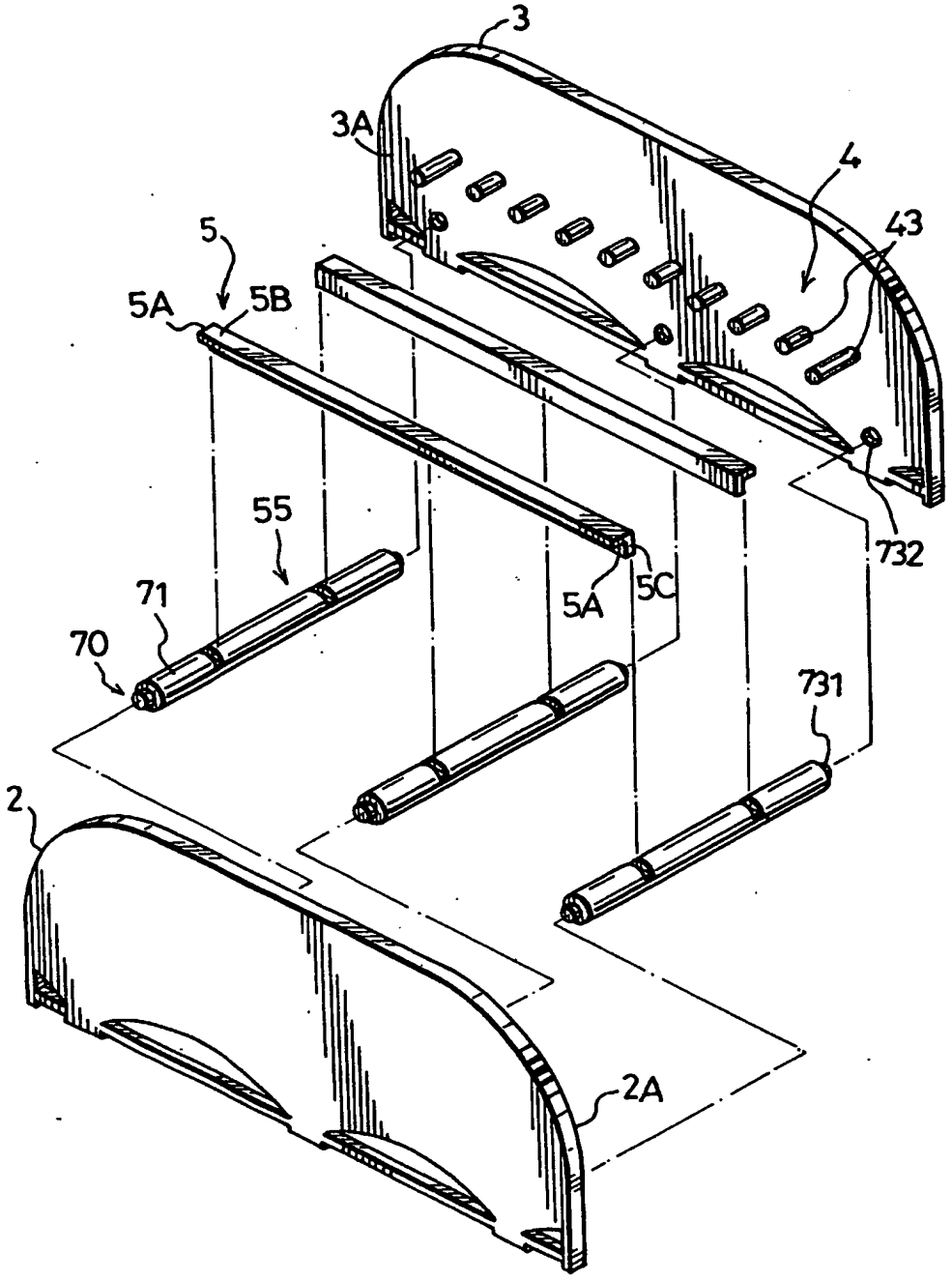

FIG.1

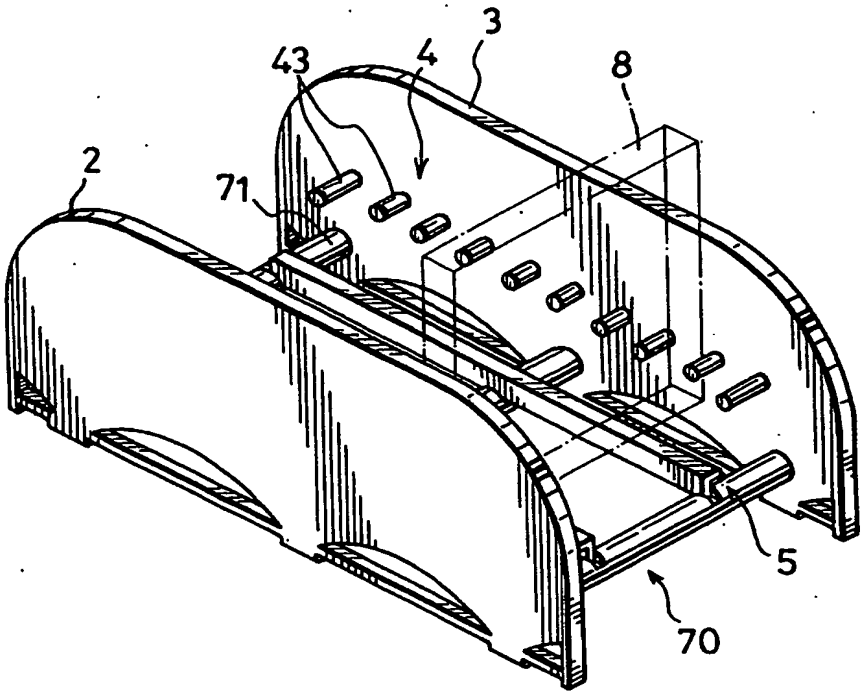

FIG.2

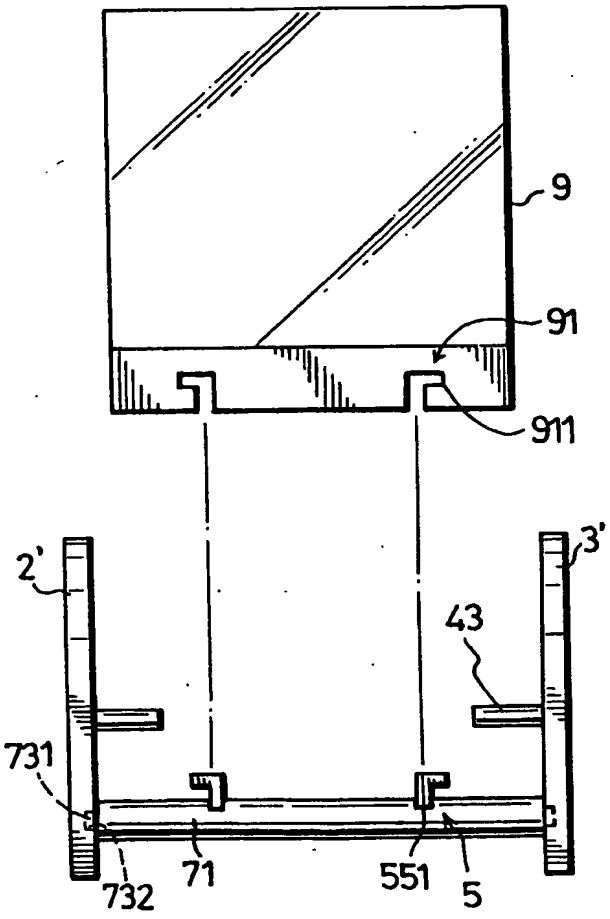

FIG. 3

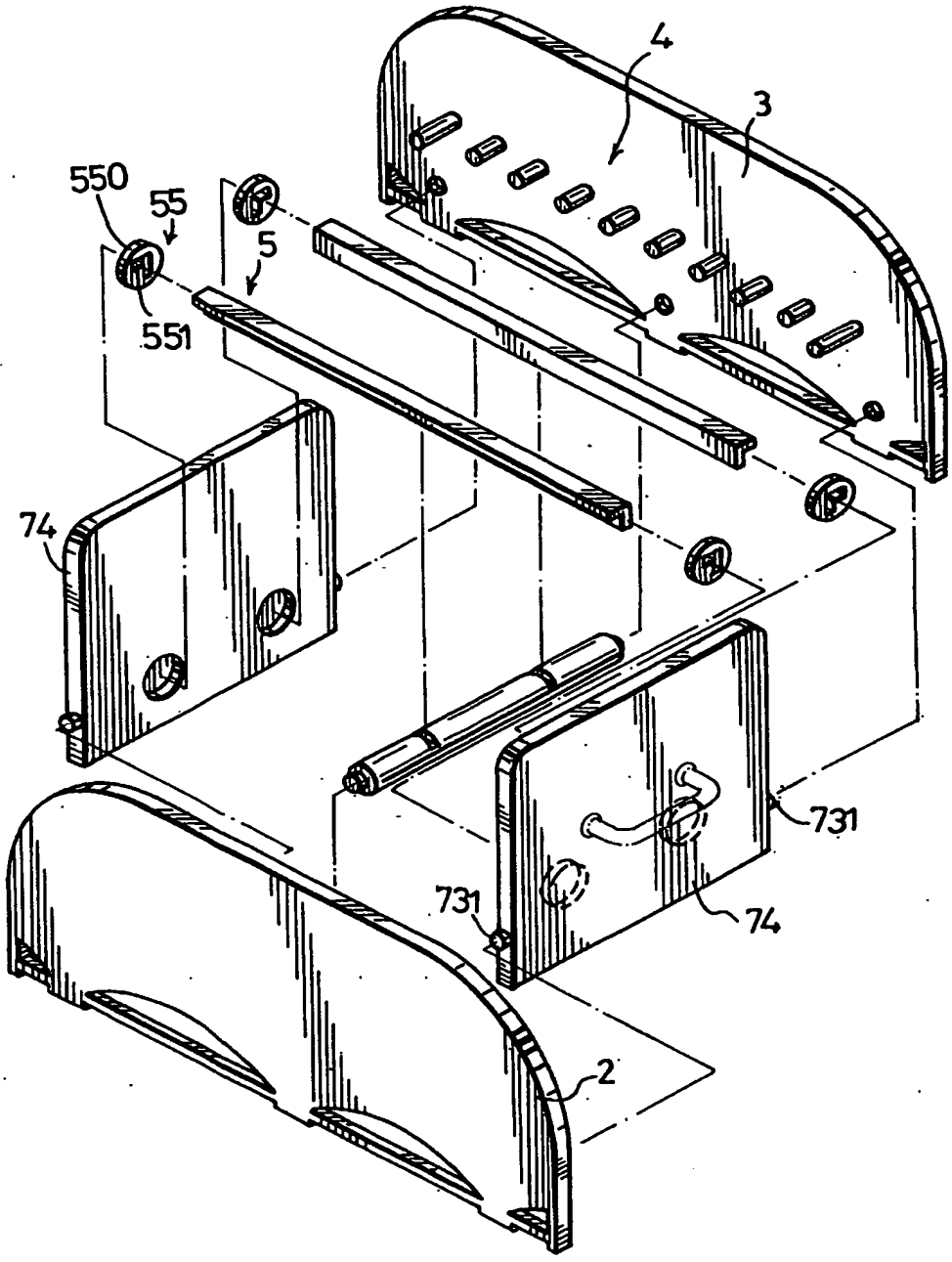

FIG.4

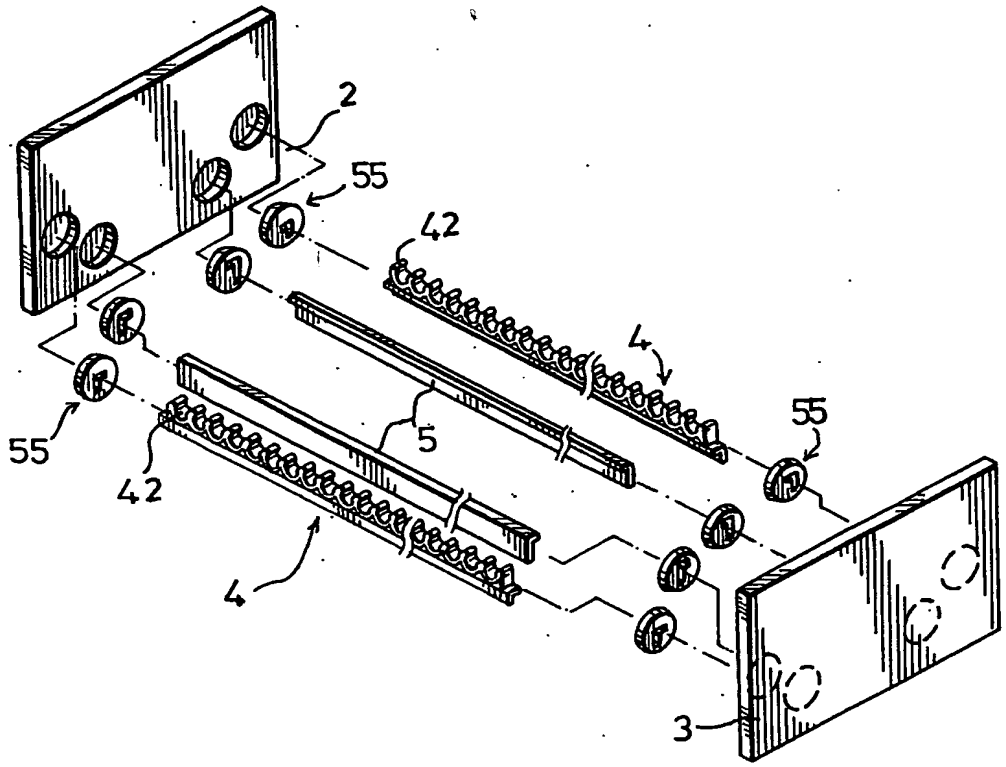

FIG.5

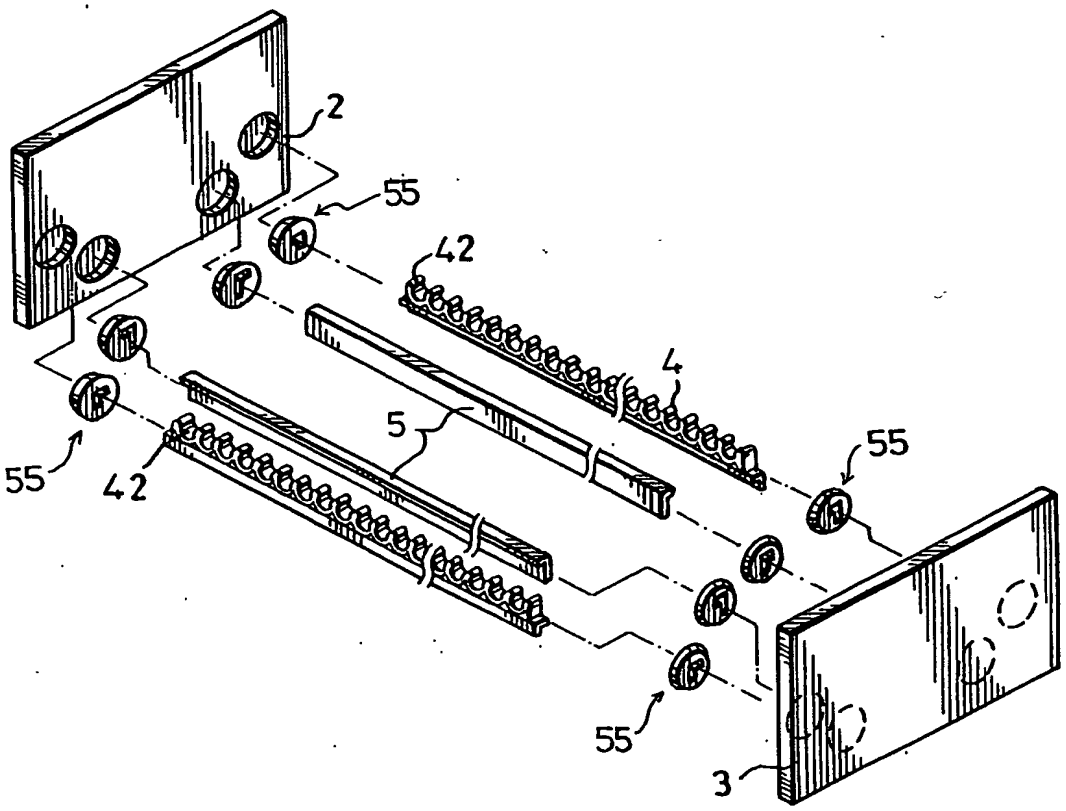

FIG. 6

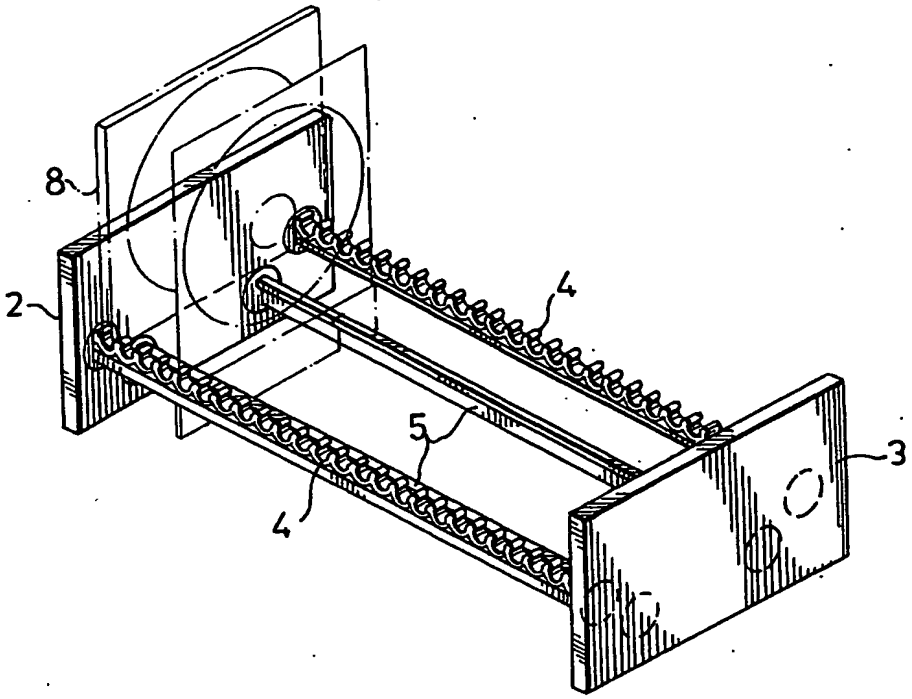

FIG. 7

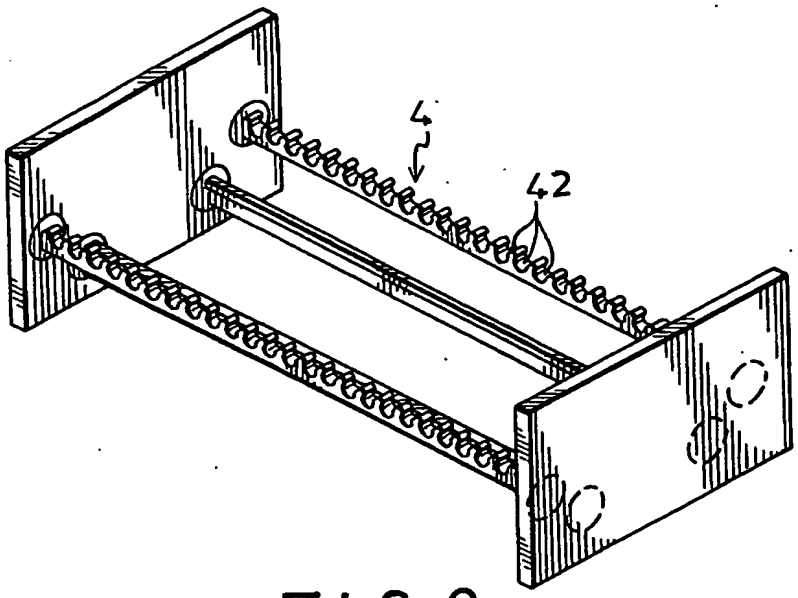

FIG. 8

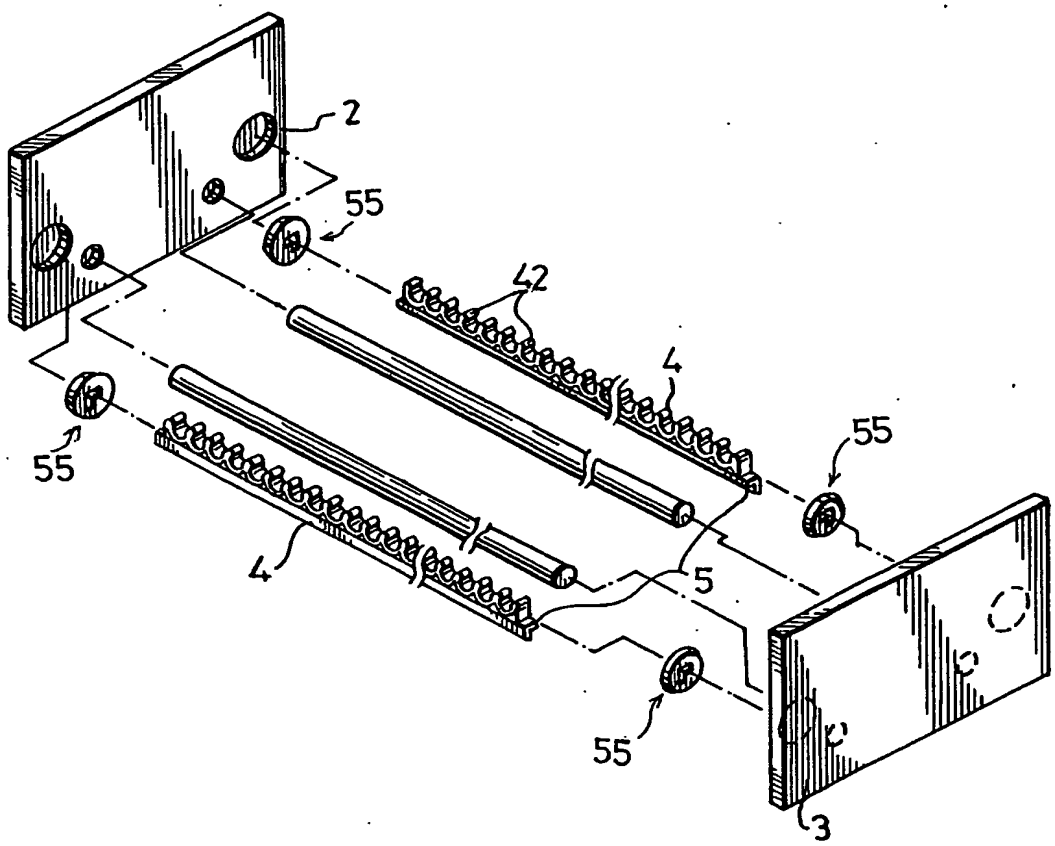

FIG.9

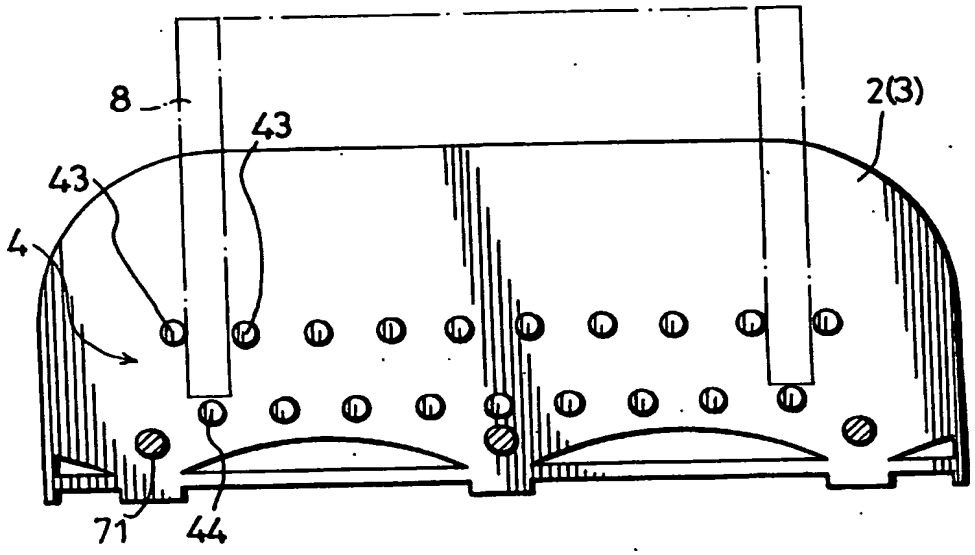

FIG. 10

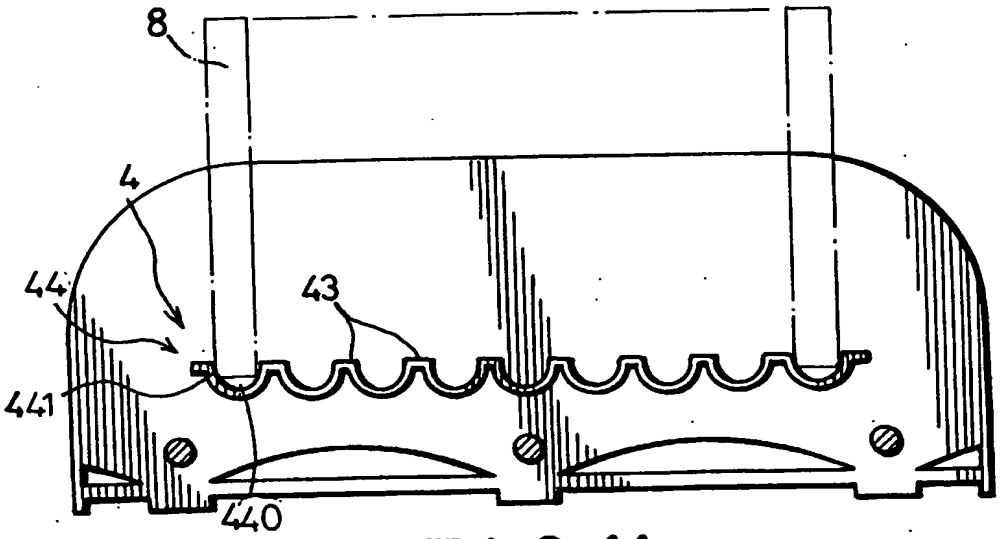

FIG. 11